

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
15 December 2005 (15.12.2005)

PCT

(10) International Publication Number  
**WO 2005/119779 A1**

(51) International Patent Classification<sup>7</sup>: **H01L 27/10**,  
21/82, 29/786, 21/336

(21) International Application Number:  
PCT/JP2005/010308

(22) International Filing Date: 31 May 2005 (31.05.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2004-166274 3 June 2004 (03.06.2004) JP  
2004-270418 16 September 2004 (16.09.2004) JP

(71) Applicant (for all designated States except US): SEMI-  
CONDUCTOR ENERGY LABORATORY CO., LTD.  
[JP/JP]; 398, Hase, Atsugi-shi, Kanagawa 2430036 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): KATO, Kiyoshi  
[JP/JP]; c/o SEMICONDUCTOR ENERGY LABORA-  
TORY CO., LTD., 398, Hase, Atsugi-shi, Kanagawa  
2430036 (JP). YAMAGUCHI, Tetsuji [JP/JP]; Ko-  
hito nakano 207, 1-17-33, Tsumadaminami, Atsugi-shi,  
Kanagawa 2430814 (JP). ASANO, Etsuko [JP/JP]; c/o

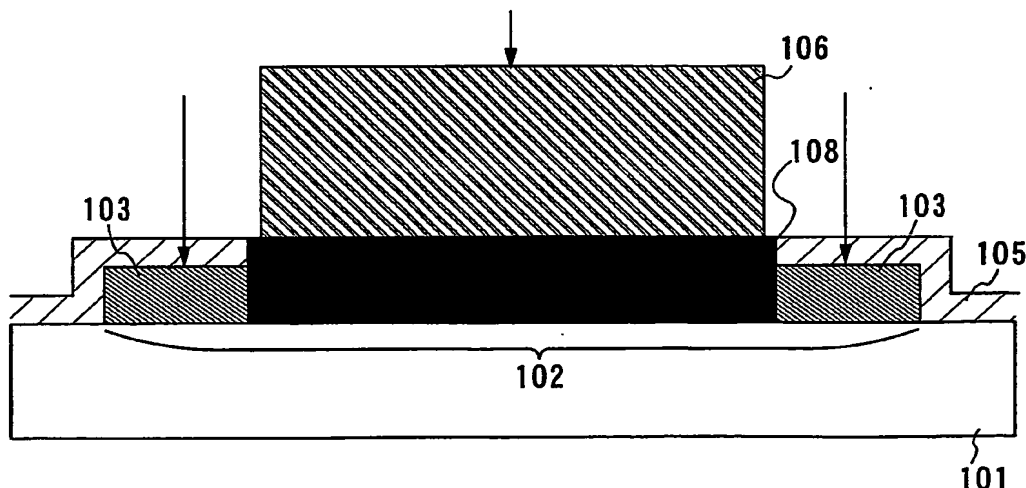
SEMICONDUCTOR ENERGY LABORATORY CO.,  
LTD., 398, Hase, Atsugi-shi, Kanagawa 2430036 (JP).  
IZUMI, Konami [JP/JP]; c/o SEMICONDUCTOR EN-  
ERGY LABORATORY CO., LTD., 398, Hase, Atsugi-shi,  
Kanagawa 2430036 (JP).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,  
MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ,  
OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL,  
SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,  
VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: MEMORY DEVICE AND MANUFACTURING METHOD OF THE SAME



(57) Abstract: An easy-to-use and inexpensive memory device is provided while maintaining product specifications and productivity even when a memory is formed on the same substrate as other functional circuits. The memory device of the invention includes a memory cell formed on an insulating surface. The memory cell includes a semiconductor film having two impurity regions, a gate electrode, and two wirings connected to the respective impurity regions. The two wirings are insulated from each other by applying a voltage between the gate electrode and at least one of the two wirings to alter the state of the semiconductor film.



**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*